**ASSESSING THE NEW JOINT PUB 5-0 INTERPRETATION
OF "CENTER OF GRAVITY":
WILL IT HELP OR CONFUSE JOINT PLANNING?**

by

Lieutenant Colonel Thomas P. Galvin
United States Army

Dr. Jerome T. Comello
Project Adviser

U.S. Army War College
CARLISLE BARRACKS, PENNSYLVANIA 17013

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ABSTRACT

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Theoreticians, doctrine writers, and warfighters alike have over the last quarter century employed Clausewitz's concept of the Center of Gravity, that if one identifies the enemy's "hub of power and all movement," then destroying or neutralizing it leads to the enemy's downfall. However, the concept has been applied in many disparate ways by the U.S. joint community and the services, leading to tremendous controversy and inconsistency in its use. Now, the emerging Joint Publication 5-0 is offering yet another new definition to be applied across the military. It sees a force as a system-of-systems, and the center of gravity as the capabilities, characteristics, or sources of power from which the force derives it strength, freedom of action, and will to act. This enables effects-based operations by allowing planners to derive actions that directly or indirectly influence the center of gravity, theoretically "the most direct path to mission accomplishment." While the joint community has clearly settled on this definition, does it achieve what is purported? Does it resolve the previous controversies or does it merely produce new ones? This paper examines these questions in a study of this new definition and how it supports or confuses the joint planning process.

ASSESSING THE JOINT PUB 5-0 INTERPRETATION OF "CENTER OF GRAVITY":
WILL IT HELP OR CONFUSE JOINT PLANNING?

War is a complex and violent art. So, it is understandable that the practitioners of warfare have desired a universal principle that guarantees success by simplifying some key aspect. Would not some sort of 'silver bullet' be welcome, that when fired at the right place and time could lead to the opponent falling apart like a house of cards? This seems to have been the fuel behind the promotion of 'Center of Gravity' (CoG) as a key joint concept. Theoreticians, doctrine writers, and warfighters alike have over the last quarter century latched on to the various references to Center of Gravity in Clausewitz's famous work *On War*, believing the Prussian to have been on to something. Unfortunately, they produced a wide range of disparate interpretations and determination methods, some of which have been criticized as departing from Clausewitz's ideas.[1] Some theoreticians even question whether CoG is a relevant concept outside conventional warfare, such as in the War on Terror (WOT).[2]

Enter the new Joint Publication (JP) 5-0, due to be released in 2006. Built on systems theory and effects-based operations, JP 5-0's doctrinal foundation agrees with the Clausewitzian notion that the key to strategic success depends on applying effects to influence the adversary's greatest source of power, its "center of gravity," in order to achieve our mission and prevent the enemy from achieving his. Not only does the draft JP 5-0 assert that CoG is relevant to all operational environments including the WOT, it treats it as a critical step in the campaign planning process. Planners take as input a detailed system-of-systems analysis of the enemy, determine its center of gravity, then systematically analyze it in order to "produce the right combination of effects in time, space, and purpose … to neutralize, weaken, or destroy it" without wasting precious resources. Theoretically, doing so "is the most direct path to mission accomplishment."[3] It sounds very promising.

Unfortunately, the description of CoGs in JP 5-0 and its accompanying literature on effects-based operations are likely to generate more controversy than resolution. Its view that CoGs are multi-component entities of physical nodes and linking relationships is new and markedly different from previous interpretations of Clausewitz. JP 5-0 suggests that a force has one CoG with strategic and operational components, whereas many others saw distinct strategic and operational CoGs. Since the joint community has clearly settled on the definition in JP 5-0, to dismiss it as inconsistent with Clausewitz's original idea is unhelpful. Rather, we should ask whether or not this definition and its application in the planning process achieves what JP 5-0 purports.   Are we confident that joint planners can readily derive this sort of CoG from a system-of-systems analysis of the enemy and apply it effectively in the planning

process? Are we comfortable that the result will be a CoG that when weakened, destroyed, or neutralized, will directly achieve mission accomplishment? Or, are there seams within this process that could instead introduce confusion or lead to the wrong result? If so, can we mitigate them? If not, does this mean JP 5-0's construct is fundamentally flawed?

This paper begins with Clausewitz's original idea and some key points of contention predating the draft JP 5-0. It will then present JP 5-0's CoG definition to show how it addresses these issues. Next, it will evaluate JP 5-0's use of CoG in the planning process to identify pitfalls. Finally, it will offer recommendations to mitigate those pitfalls and suggest areas for further research.

Clausewitz, Conventional Warfare, and the Elusive Center Of Gravity

Clausewitz's famous work *On War* described his observations of the massed conventional warfare of his time, the early 19th century. However, many of his ideas have survived to the present day because of the way he employed analogies of physics, engineering, political science, and other sciences to describe warfare's enduring strategic nature. A Clausewitzian is likely to believe that the tactics and tools of war may change, but the nature of war does not. One aspect of this nature is the notion that belligerents have key capabilities or characteristics that provide its force with the will and power to act. Borrowing a term from physics, he called it the "center of gravity," and introduced it in a key passage of *On War*'s Book Eight:

> "What the theorist has to say is this: one must keep the dominant characteristics of both belligerents in mind. Out of these characteristics a certain *center of gravity* develops, the hub of all power and movement, on which everything depends. That is the point against which all our energies should be directed."[4]

Unfortunately, Clausewitz passed away before he could finish his famous work, and inconsistencies in his use of the term among Books Six and Eight were left unresolved.[5] Making matters worse, Howard and Paret translated two different German-language phrases in the manuscript (*schwerpunkt* and *centra gravitates*) as 'center of gravity' even though the meanings were clearly different.[6] This provided plenty of fodder for modern-era theoreticians and doctrine writers to develop their own independent interpretations, radically different from each other, yet claiming to derive from Clausewitz.[7] The following is a sampling of points of contention directly relevant to analysis of JP 5-0.

First is the question of 'one CoG or more than one.' Clausewitz's text, and indeed the meaning of the term 'center of gravity' from physics,[8] suggests that an enemy force has one and only one.[9] The only instance where Clausewitz permitted multiple centers of gravity is when a force is dealing with multiple enemies, and even then there is opportunity to conceptualize the

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multiple fronts as a single conflict.[10] However, he did not explicitly prohibit multiple centers of gravity, thereby allowing some U.S. Air Force officers to equate many "centers of gravity" as strategic targets.[11] Over time, the chorus for 'one' has sung louder. However, a related question concerned whether or not there are separate CoGs at the strategic and operational levels of war: is there one CoG or two? While Clausewitz did not directly stratify CoGs this way, his use of the term materially differed between Books Six and Eight in *On War*. Those who support the existence of a separate 'operational CoG' draw from a keypassage in Book Six on defense:[12]

> "A center of gravity is always found where the mass is concentrated most densely. It presents the most effective target for a blow; furthermore, the heaviest blow is that struck by the center of gravity." [13]

This passage suggested a point of great military strength. Yet, the following passage from Book Eight shows how a CoG could be something else entirely:

> "For Alexander, Gustavus Adolphus, Charles XII, and Frederick the Great, the center of gravity was their army. If the army had been destroyed, they would all have gone down in history as failures. In countries subject to domestic strife, the center of gravity is generally the capital. … Among alliances, it lies in the community of interest, and in popular uprisings it is the personalities of the leaders and of public opinion."[14]

Considering the example of popular uprisings, friendly forces will not fear the heady blow of the uprising's "popular opinion." This interpretation led to a notion that strategic centers of gravity were political in nature while separate operational centers of gravity were the enemy's military centers of strength.[15] However, the fact that Clausewitz never explicitly argued for separate strategic and operational CoGs leads some to believe the latter does not really exist. Indeed, his justification for Alexander's army is strategic in nature, and declaring a separate operational CoG would appear redundant or potentially contradictory. [16]

The third question concerns how to determine a CoG and attack it. Clausewitz himself saw CoG determination as a matter of exercising the art of strategic judgment, and not subject to rational analysis or formula.[17] However, *On War* provided some useful hints that encouraged the pursuit of general-purpose determined methods. For example, CoGs were not restricted to physical objects nor military leaders or units. A CoG could be a socio-psychological phenomenon, based on the charisma or personality of a leader or popular support of a cause.[18] A country's "capital," particularly in the context of domestic strife, could encompass its political, economic, informational, and infrastructural systems at least equally to the military.

Still, the reader was left with questions to ponder. For a powerful leader, under what circumstances would the center of gravity not have been the army? Did Clausewitz intend that

public opinion is only the center of gravity during an uprising? A number of modern officers and theoreticians consider national will to be the CoG under some circumstances.[19] Consequently during the late 1990s and early 2000s, several different authors and theoreticians proposed a variety of CoG determination methodologies, employing different mixes of art of science. But ultimately, all these methods seemed to follow one of two distinct approaches.

One approach was based on bracketing, that the enemy's CoG lay within a defined system or structure, and locating it involved acting on the accessible parts of the enemy's system until the CoG becomes apparent. For example, in 1999 Colin Agee from the School of Advanced Military Studies proposed the "Onion Method." This method assumed the adversary's center of gravity was essentially the innermost layer of a system-of-systems designed to allow the enemy to operate. The method presumed that the CoG would be surrounded concentrically by other entities known as "protectors," "connectors," and "sustainers." Identifying these would eventually lead one to find the CoG.[20] Also in 1999, Colonel Philip Meilinger of the Air War College offered the "Strategic Helix Method" that assumed that the CoG would probably be undeterminable in steady-state, so friendly action was necessary to cause it to emerge. The 'strategic helix' modeled a feedback mechanism. As the effects of offensive or defensive action were measured against the enemy, friendly forces could zero in on the CoG.[21] Using such methods required that one accept the underlying structure of the method's system in the general case, and that the CoG always lay within it. That proved to be a difficult assumption.[22]

Consequently, the more popular approaches have tended towards a less-prescriptive generate-and-test method. In other words, based on information gathered about the enemy, the analyst generated a set of probable CoG candidates and applied a test or measure that narrowed down the list to one. Or, if none passed the test, the analyst generated more candidates. One such method was developed at U.S. Army War College's Center for Strategic Leadership by Captain Tim Keppler in 1994 and furthered by Major Kevin Giles and Captain Tom Galvin in 1996. Through an analysis of the enemy's economic, military, diplomatic, psychosocial, historic, cultural, and other factors, the analyst identified candidates from key sources of enemy strength that constituted a CoG candidate. The reader then applied a single-question test[23] to each candidate such that only one CoG would pass. This method lent itself to the development of an automated model,[24] used and refined since 1996 to facilitate the study of over one hundred historic and contemporary situations.[25]

An even-less prescriptive generate-and-test method was offered in 2002 by Antulio Echevarria of the Strategic Studies Institute, who specifically drew on Clausewitz's distaste for

formal models. He offered a simple three-step method to find the "*focal points* that serve to hold a combatant's entire system or structure together and that draw power from a variety of sources and provide it with purpose and direction."[26] After reviewing the war's objectives and applicability of the CoG concept,[27] the analyst assessed whether or not the enemy operated as a single unified system or not.[28] If so, the analyst sought that which held the system together and made it run. That was the CoG.[29] One example Echevarria proposed was the extremist ideology of al-Qaeda. Its "hatred of apostasy" was the glue that kept the organization running, not al-Qaeda's leadership which could readily be replaced.[30]

A shortcoming of the above methods was that all of them looked at CoG determination in isolation. They did not prescribe the next step of what to do with the CoG. This may be one reason why the best-known method is the CG-CC-CR-CV model (Centers of Gravity – Critical Capabilities – Critical Requirements – Critical Vulnerabilities) from Dr. Joe Strange of the Marine War College.[31] His CoG determination approach offered five categories of moral and physical entities as likely candidates, each being a potential source of adversary strength.[32] While not prescribing a test, Strange guided the analyst to match the candidates against described properties of a CoG such as being a "dynamic agent of influence." He also stressed what CoGs are not, e.g., critical requirements or vulnerabilities.[33] With a CoG identified, the analyst derived those Critical Capabilities that permitted the CoG to function, the Critical Requirements necessary to maintain the Critical Capabilities, and the Critical Vulnerabilities that friendly forces should exploit.[34] This information helped fuel the whole operational planning process.

The strength of the generate-and-test approach was its flexibility. It was easier to take the rules-of-thumb employed by this approach and generalize them for new, unfamiliar situations. On the other hand, it was much harder to adapt the rigid structures used by the bracketing approaches, and success was questionable.

<u>Systems Theory, Effects-Based Approaches, and the New Center of Gravity in JP 5-0</u>

In terms of the role of CoG determination in joint planning, JP 5-0 is clear. "One of the most important tasks confronting the Joint Force Commander's staff in the operational design process is the identification of friendly and adversary Centers of Gravity (CoGs). …The essence of the operational art lies in being able to produce the right combination of effects in time, space, and purpose relative to a CoG to neutralize, weaken, or destroy it. In theory, this is the most direct path to mission accomplishment."[35] It goes on to say that "this process cannot be taken lightly, since a faulty conclusion resulting from a poor or hasty analysis can have very serious consequences."[36] Consequently, JP 5-0 embeds CoG determination and application fully in the

joint planning process. In essence, it extends Strange's ideas. The analyst is given a defined set of inputs, including a full systems understanding of friendly and enemy forces. From this, the analyst derives the enemy's CoG, although the JP does not prescribe a specific determination method. The analyst then derives CCs, CRs, CVs, Decisive Points, Lines of Operation, and eventually a phased Course of Action that all relate back to the CoG. The outcome should identify actions that exploit the vulnerabilities to influence or coerce the enemy CoG to do our will. JP 5-0 also has the analyst identify the friendly center of gravity in order to protect it. On the surface, this is a very sound approach. It identifies a purpose for center of gravity determination and a logical set of inputs and outputs that ultimate contribute to the whole planning process.

That said, what does a JP 5-0 variety CoG look like? It is defined as "the set of capabilities, characteristics, and sources of power from which a system derives its moral or physical strength, freedom of action, and will to act."[37] It further defines a system as a "functionally related group of elements forming a complex whole,"[38] of which a nation-state would be an example. The system consists of six overlapping subsystems known as PMESII (political, military, economic, social, informational, and infrastructural) and is modeled as a network of physical entities, called 'nodes,' and relationships among them, called 'links.' Consequently, JP 5-0 asserts that the CoG could extend into multiple PMESII subsystems. In doing so, it declares that the strategic CoG "focuses in the political system" while the operational CoG "resides in the military system."[39]

This provides a middle-ground approach against some of the previous controversies. JP 5-0 defines the CoG as a *set*, a single yet multi-component entity. This is in keeping with Clausewitz's earlier example about popular uprisings with its multi-component CoG of the personalities of the leaders and public opinion. But, it avoids the question of separate strategic and operational CoGs by declaring them a connected whole. Also, it is unclear how one would derive a CoG from such a model. One might think a flexible generate-and-test method would work, as JP 5-0 uses Strange's terms liberally and includes a similar variety of suggested candidates.[40] But, the depiction of CoGs as nodes in a network leads us uncomfortably toward bracketing methods with all its shortcomings. In order to assess this definitional construct fully, we must first take a closer look at the "system" the analyst would have to use.

Assessing the Inputs: Operational Net Assessment

This system is the output of a process called Operational Net Assessment (ONA), described in Joint Warfighting Center (JWFC) Pamphlet 4.[41] This process translates

intelligence gathered about a particular enemy[42] and encapsulates it into a description of the enemy's 'system' using PMESII as the foundation. This description uses a network-style model of nodes and links. Nodes are physical entities – individuals, groups, places, etc., while links represent relationships that can be behavioral, functional, or physical.[43] Analysts assign strength values to links to reflect levels of importance.[44] ONA databases are computer applications that analysts use to store and maintain information on nodes and links as new intelligence is gathered.[45] These databases are relational, which disciplines the process so data retrieval and analysis can be done reliably and consistently.[46]

Application of the ONA includes the analysis of *effects* on the system, defined as "the physical or behavioral state of a system that results from an action or set of actions."[47] This approach purports to allow a friendly entity to model the enemy's adaptive behavior, such as how an enemy compensates for the successful production of effects by a friendly action. Effects and counter-effects can include changes to the structure of the system, such as the addition or deletion of nodes and links, or to the nature or strength of relationships within the system.[48] From this, the analyst identifies that part of the system which meets the definition of a CoG, that "comprises the capabilities, capabilities, and/or sources of power from which a system derives its freedom of action, physical strength, and will to fight."[49] Once the analyst determines the CoG, he then determines the set of Critical Capabilities, Critical Requirements, Critical Vulnerabilities, Decisive Points, and Lines of Operations that allow planners to derive ways and means to influence the CoG.

Conceptually, a strength of the approach is the role ONA plays in a useful feedback loop applicable throughout the campaign.[50] Along with providing outputs to the planning process, ONA captures the effects of friendly actions, allowing planners to compare expected and actual results and adjust the plan as needed. The ONA also allows prediction of second and third-order effects and particularly the undesired effects to be avoided.[51] While this helpfully describes what happens when friendly forces attack some enemy thing, how does ONA help the analyst's ability to pick the right thing to attack, the CoG? The use of ONA nodes as a CoG candidate pool is problematic because there are fundamental differences in how ONA and CoG processes build and evaluate the enemy's system.

The first challenge is that CoG determination wants to know about the forest, while ONA cannot provide all the trees. Beyond the obvious challenge of incomplete or contradictory information about the environment,[52] ONA databases and their analysts can only manage so much data, so some limit on nodes or links must be imposed. After all, there are a massive[53] number of possible nodes and links in even the simplest nation-state system, but intelligence

assets can only collect on so many. Limits can be expressed as a total number of nodes and links or some other restriction.[54] Also, ONA assumes that the sum of the PMESII subsystems sufficiently approximates the total enemy system. This may be acceptable for operational planning purposes. However, there may be significant entities that lie outside the enemy system being analyzed, and it may not be possible to include all of them in the model. These may include transnational corporations, super-empowered individuals, international organizational, non-governmental organizations, etc.[55] Planners model these entities within the context of known relationships with the enemy, yet the unknown relationships can be complex and indirect. Operational planners can mitigate these problems through assumptions and targeted collection efforts.

The second challenge regards the difficulty in describing all the individual relationships so that the overall system-of-systems analysis describes the system's behavior. For example, ONA wants to model how an enemy system actually behaves and not how it is designed to behave according to the enemy's system of government.[56] However, mixing behaviors may be unavoidable given limits on available information about the enemy. This risks inconsistency within the model.[57] Relationships can also appear inconsistent between echelons. For example, a relationship between some nation's Ministry of Defense and Minister of State may contradict relationships among subordinate military commands and embassies, yet the higher relationship does not necessarily trump that of the lower echelons.[58] The duration of particular relationships is also important. They can be permanent, temporary, one-time only, or variable according to conditions.[59] Mitigating these problems requires close synchronization among all the agencies providing input to the ONA database, which will be challenging as these include non-Department of Defense entities.[60] Analysts must exercise discipline in encoding not only the nodes and links but how and why they were derived, facilitating re-examination of the enemy as more information becomes available and avoiding the pitfall of taking previous ONA information on faith.

The third challenge regards the limitation of nodes to describe only physical objects. Many important 'things' about an enemy system are not physical objects at all, but humans routinely describe them as if they were tangible. This is called *reification*.[61] Some such objects could be "moral" CoG candidates, Critical Capabilities, or Critical Vulnerabilities. We tend to treat "national will" as different from the sum of the individual desires of the people.   We lambaste "the media" for putting forth information or opinions that we might not like, even though those opinions only emanated from a couple of its individual members.[62] "Extremist ideologies" are concepts drawn from human life and culture. The ideology can be put down on paper, but

the ideas are themselves intangible.[63] Some societies or cultures attach a strong value to regional or international recognition of a culture's "identity". [64] People generally understand what these example terms mean, but their vagueness will cause individuals to interpret them differently. This introduces unwanted complexity and inconsistency in modeling organizational behavior. Consequently, modern social science treats reification as a problem and seeks ways to avoid it.[65] It is possibly also for this reason that the ONA process strictly defines nodes as physical entities, allowing for effects on them to be measurable.

Unfortunately, this restriction constrains both how ONA informs CoG analysis and how the results of effects-based operations feeds back to the ONA. The CoG analyst is looking for the sources of power that gives the system the will to act. "National will," "extremist ideologies," "cultural identity" are examples of moral CoGs found to provide that source in different circumstances.[66] If such entities are not available from the ONA, the CoG analyst must identify them from some other source. Further, because effects are defined as changes in the physical or behavioral state of a system,[67] there is no direct mechanism for the planner to define effects and actions against moral entities. It is crucial that planners not attempt to describe effects against a moral entity in terms of actions against a physical entity. For example, if an extremist ideology is a moral CoG in the War on Terror,[68] attacking the carriers of that ideology may cause the undesirable effect of drawing more people to the ideology.

Some of these challenges bear themselves out in Figure 1, an example enemy system provided in the Effects-Based Operations literature. This figure depicts a system where a terrorist cell receives funding through a corrupt central bank official skimming International Monetary Fund (IMF) grants. The funding is funneled to other foreign sources toward the acquisition of weapons of mass effect (WME) materials, which the terrorist cell desires for use in asymmetric attacks on friendly bases.[69] While this is a simple figure to follow for learning ONA, it makes for a poor example of how it might help the CoG determination process.

First, it fails to depict control over the system. CoG analysis requires this information to determine the sources of moral and physical strength and freedom of action.[70] While we see what takes place and what each node contributes, we do not know who or what makes it act. [71] It also fails to describe which entities are passive players. For example, the authors likely wanted the reader to assume the central bank was neither involved nor even cognizant of the relationship between one of its employees and the terrorist cell. However, a different explanation exists where the bank was actually in control and using an employee as a pawn.

Second, the diagram is unhelpful in explaining 'why' the system exists and what keeps it together. What provides its will to act?[72] It could be an extremist ideology that drives hatred of

friendly nations, a cultural identity that is under assault by foreign influence, or an economic threat brought about by friendly forward presence. Is this source of will universal in the system? Or, could ideology motivate the terrorist cell while the bank official merely acts on greed? The strength of will of each participant is also unknown. Analysts need this information to properly determine a CoG, as the answers may suggest that the CoG is moral and not physical.[73]
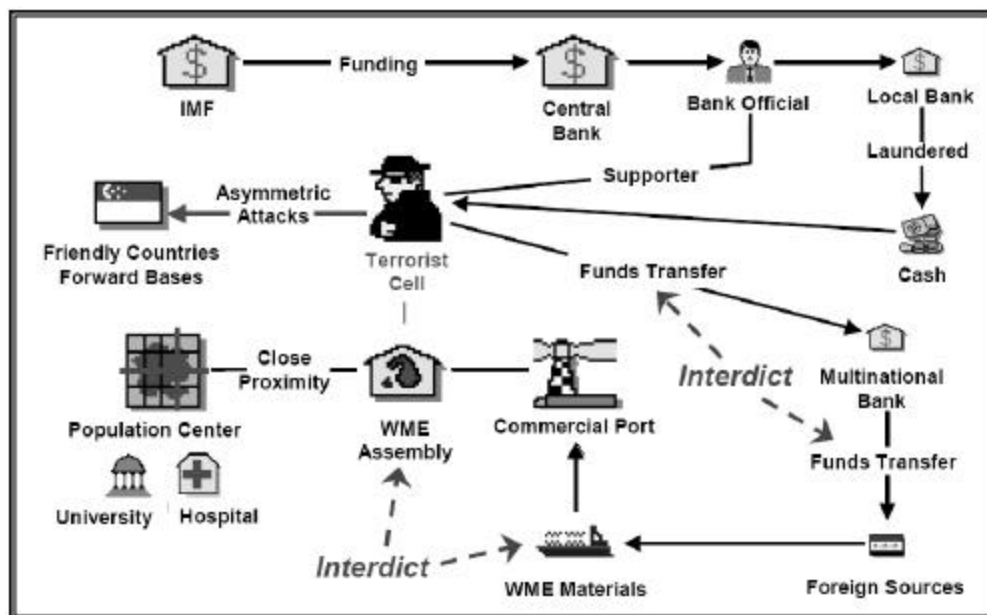

Figure 1. Example Nodes and Links of an Adversary System [74]

A better ONA example would do more than depict control and motivation. It would demonstrate the PMESII subsystems, showing how they overlap as JP 5-0 describes.[75] Relationships among these interdependent systems help demonstrate control or lack thereof. The example should also offer suggestions on how the system might adapt and self-correct in response to friendly action, informing effects-based operations later on.[76]

Assessing the New Definition of Center of Gravity

Even if the ONA is adjusted as suggested above, reliably deriving a CoG will still be difficult for two reasons. The first reason is that ONA does not offer information that helps analysts decide whether a CoG is multi-component or not, nor does it offer rules on how many components it may have. Taking JP 5-0's definition at its extreme, one could construct a CoG

that consists of all viable candidate nodes and the links among them. Because the true CoG is likely included, neutralizing this larger 'CoG' would promote mission success but at a higher cost and greater risk. Narrowing the CoG to as few entities as possible is imperative. This requires clarity in the doctrine or in supplemental literature to guide analysts toward choosing the fewest nodes that collectively state the source of the system's moral and physical strength, freedom of action, and will to act.

There is a corollary regarding the operational CoG, and the potential redundancy with the definition of a Critical Capability. While strategic and operational CoGs may overlap,[77] they will often be physically distinct entities. But, it is less clear whether or not the operational CoG will be truly a CoG, a capability or source of power from which the system derives its strength or will, or a Critical Capability, "a crucial enabler for the center of gravity to function."[78] It would be logical that an operational CoG serves as a Critical Capability for a strategic CoG, but JP 5-0 neither confirms nor denies this relationship. Doing so would clarify and strengthen the arguments for a multi-component CoG.

The second reason is that the agency chartered by JP 5-0 to perform CoG determination, the joint commander and his staff, may be the wrong one. It may be more appropriate at the national or interagency level as so much about the CoG concept resides there.[79] After all, ONA requires input from non-military agencies with visibility over the PMESII systems, including the military. [80] The strategic CoG will likely not be a military entity. The CoG will become the primary target for effects from all elements of national power, including diplomatic, informational, economic, etc. The problems of pinning the responsibility to determine a CoG on a military command becomes evident. The answer could skew toward that aspect of the strategic CoG that has military significance, but might not be the strategic CoG at all. The joint force may tend towards employing military means to influence it when they would be least appropriate. That JP 5-0 describes the strategic and operational CoGs are interconnected makes this worse, as the joint commander clearly has domain over determining operational CoGs and employing military means against them.[81]

The good news is that JP 5-0's definition is not military-centric, and therefore could be readily adapted for interagency use. A CoG is the source of power for a *whole system* and not merely one component of it, such as the military. Hence, at the interagency level, the elements of power should be able to agree on the CoG and establish unity of effort in developing ways and means to apply against it. The joint commander is given the strategic CoG from above and seeks options for applying military means against it at the appropriate time.

With these adjustments made, the question remains whether or not one can expect that neutralization or destruction of a JP 5-0 CoG leads to mission accomplishment. We cannot answer 'yes,' because there are so many other factors such as friction[82] that will come into play. However, there is nothing that suggests a definitive 'no.' We are theoretically targeting that which holds the whole enemy system together and gives it its strength and will. We are approaching it holistically by applying all elements of power against it, rather than one-dimensionally with military force. We may not succeed in making the enemy's system fall like a house of cards, but we may knock it off-balance enough to disrupt its control mechanism, diffuse its ideology, or constrain its actions.[83] Consequently, JP 5-0's definition of CoG should be considered generally acceptable.

Toward a New CoG Determination Method

How then does one go about determining a JP 5-0 CoG? While a detailed proposal for a new or updated determination method is beyond the scope of this paper, there are principles that this method should incorporate. Overall, the method should stick with the generate-and-test approach. The bracketing approach of whittling away at the enemy system until only the CoG remains would be just as inefficient and ineffective against a node-link model as it was in other constructs. The ONA process lends itself to rapid generation of viable CoG candidates.

The inputs to CoG determination must include both physical and moral entities. ONA currently provides physical nodes, but it or some other process should overlay notions of control, motivation, and other intangible or moral entities.

The method should provide guidelines on how to tell when a moral entity is indeed separate from the physical object with which it may be associated. For example, at what point is the "will of the people" separate from the people in the system? When does an ideology cease to be simply an idea in an extremist's mind and take on a life of its own? For CoG determination, such information helps identify the priority for friendly effects. Even if moral entities are not found to be the CoG, they can still potentially serve as Critical Capabilities, Critical Requirements, and especially Critical Vulnerabilities. The method must foster the ability to reduce the CoG to the fewest entities possible. If the CoG candidate is a physical entity, such as a military unit or governing body, the analyst should ensure that no sub-element is also a CoG candidate. If moral, then the analyst should narrow that candidate's focus to see if it is a better candidate. For example, is it generically the "will of the people" or is it specifically the "will of the people to achieve a particular objective?"[84]

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As JP 5-0 permits multi-component CoGs, the method must include insights as to when, why, and how this occurs. It must also help rule out when one of those components is no more than a Critical Capability for the other.

Finally, there should be ways of validating the results. The planning process offers two potential approaches. The first is a reverse-engineering approach on the ONA. After analysts have applied a test to determine the best CoG candidate, they can superimpose that CoG on the ONA to verify that it logically and singularly controls and motivates the system. If the ONA shows that neutralization or destruction of the CoG would defeat the system, then it is more likely that the correct CoG has been found. The second approach is directed forward. As planners derive the necessary effects to meet friendly strategic objectives, they can verify whether or not those effects as applied against the CoG provide a clear path to mission accomplishment. The merits of either approach clearly require further study, but a validation process would be a tremendous tool for planners.

<u>Conclusions and Areas of Further Study</u>

The emerging Joint Pub 5-0 offers a tantalizing new look at an old problem. The importance placed on center of gravity determination in joint operations is well-founded. The emerging JP 5-0 provides an excellent foundation for focusing the planning effort on those aspects of the enemy that we most want to influence. However, the job is not finalized. JP 5-0 or supplemental doctrine must apply greater fidelity to the definition and description of CoG so it addresses overlap with other doctrinal concepts such as Critical Capabilities, and so analysts can reconcile the new concept of a multi-component CoG. It must also strengthen the information linkages between the ONA and CoG determination process.[85]

There are two very important areas for further study. First, the doctrinal implications of abstracting the CoG concept to the grand national level should be explored. Is it true, as this paper suggests, that strategic CoG determination belongs at the interagency level? If so, how would that work? Which agency should make the determination and promulgate it throughout the elements of national power? Would ONA be necessarily elevated as well?

Second, the modeling of effects does not adequately address the impacts of actions taken to influence moral entities. For example, JWFC Pamphlet 7 describes how actions against physical nodes cause changes in the system, defined as changes of state of the nodes. However, it is not clear that a similar model works if the node is an intangible moral entity. If the CoG is moral, how can the effects-based approach be articulated in a manner consistent with approaches against physical objects? This would go a long way toward combining the actions

of diplomatic, informational, military, and economic elements of power into a single common effects-based model.

Endnotes

[1] Joe T. Strange, *Centers of Gravity & Critical Vulnerabilities: Building on the Clausewitzian Foundation So That We Can All Speak the Same Language* (Quantico, VA: Marine Corps War College, 1996), 27-42.

[2] Antulio J. Echevarria II in *Clausewitz's Center of Gravity: Changing our Warfighting Doctrine – Again!* (Carlisle Barracks, PA: Strategic Studies Institute, September 2002)

[3] The Joint Staff, *Joint Operation Planning*, Joint Publication 5-0 – Draft Final Coordination (Washington, DC: Joint Staff, 29 December 2005), IV-13 (hereafter cited as *JP 5-0*). The version available to the author was annotated with all additions and deletions from the previous version, the Third Draft dated 10 August 2005 [hereafter referred as *JP 5-0 (Third Draft)*].

[4] Carl von Clausewitz, *On War*, trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1976), 595-596. Emphasis added.

[5] There are a number of authors that cite Clausewitz's untimely death as a contributing factor in the confusion surrounding the center of gravity concept. One is Timothy Keppler, *Center of Gravity Determination and Implications for the War Against Radical Islamic Terrorism,* Strategic Research Project (Carlisle Barracks, PA: U.S. Army War College, 18 March 2002). Keppler cited Clausewitz's own notes, included in Howard and Paret's translation of *On War*, 70, where Clausewitz himself predicted this would happen.

[6] Keppler, 3.

[7] Strange.

[8] The scientific definition is "The center of gravity of a collection of masses is the point where all the weight of the object can be considered to be concentrated," from University of Winnipeg Home Page, "Center of Gravity," *Introductory Physics*, available from http://theory.uwinnipeg.ca/physics/rot/node4.html; Internet; accessed 20 January 2006. Twin Cities Public Television Home Page, "High Jump: How do High Jumpers Set New Records?" *Newton's Apple: Teacher's Guides*, available from http://www.ktca.org/newtons/9/high.html; Internet; accessed 18 January 2006 describes it more in layman's terms. The center of gravity is the point at the center of an object's weight distribution where the force of gravity acts," and "that point where an object balances perfectly."

[9] Echevarria, 6-8.

[10] From Clausewitz, 597. "If you can vanquish all your enemies by defeating one of them, that defeat must be the main objective of the war. In this one enemy we strike at the center of gravity of the entire conflict. There are very few cases where this conception is not applicable – where it would not be realistic to reduce several centers of gravity to one."

[11] Strange, 27-42 and Keppler, 5.

[12] Keppler, 7 is one example of the use of Clausewitz, 485-486 to assert the existence of centers of gravity at the operational level of war.

[13] Clausewitz, 485.

[14] Ibid., 596.

[15] Keppler, 7.

[16] Echevarria, 14.

[17] Ibid., 13.

[18] Strange, 47, describes "Moral and Political" centers of gravity as being based on individuals or people that "must possess such qualities as determination, courage (moral and physical), and the power to persuade, inspire, or intimidate." However, others have offered that social and psychological factors can be considered as centers of gravity in their own right without a discrete relationship to a person. In *Center of Gravity: Determination, Analysis, and Application* (Carlisle Barracks, PA: Center for Strategic Leadership, January 1996), 20, P. Kevin Giles and Thomas P. Galvin, offered "will of the people" as a probable center of gravity candidate for representative democracies. "Ideology" as the center of gravity for al-Qaeda was independently derived by Keppler, 12, and John L. Haberkern, *The Global War on Terrorism: Ideology as its Center of Gravity*, Strategic Research Project (Carlisle Barracks, PA: U.S. Army War College, 2004).

[19] While not always referred to as "will", it encompasses the intent to carry out an adversarial action, a recurrent theme in CoG case studies. Both Haberkern and Keppler deduced "ideology," ergo the will to pursue the ideology as the CoG for the Global War on Terror. John B. Saxman, in "Communist Insurgencies and the Relevance of the Center of Gravity and Decisive Points" (Alexandria, VA: Defense Technical Information Center, 1988) identified "cohesion" as the center of gravity for an insurgency, referring to the will of the insurgents to conduct violent acts against their enemies. Thomas B. Bennett, in "Applying the Center of Gravity Concept to the War on Drugs," Strategic Research Project (Carlisle Barracks, PA: U.S. Army War College, 2002), asserts that the enemy center of gravity in the drug war is the demand for drugs, meaning the will of "friendly" people to purchase and use controlled substances despite their illegality and despite the physical and psychological harm to themselves and those around them. Strange, Giles and Galvin, and Echevarria offer "will" of someone or some entity as a primary strategic center of gravity candidate under a number of circumstances.

[20] Collin A. Agee, *Peeling the Onion: The Iraqi Center of Gravity in Desert Storm* (Fort Leavenworth, KS: School of Advanced Military Studies, 1992), 35-37. Agee believed that the CoG would be the most protected entity, hence the term "protectors" as the inner-most ring. The next outer ring of "connectors" was elements linking components of the onion together. The outmost ring of "sustainers" was the root system fueling the adversary.

[21] Seow Hiang Lee, "Center of Gravity or Center of Confusion: Understanding the Mystique," *Wright Flyer Paper No. 10* (Maxwell Air Force Base, AL: Air Command and Staff College, 1999), 27-28. Lee credits Meilinger with developing the strategic helix concept.

[22] Echevarria, note 40, assails both methods as ineffective and wasteful of resources.

[23] For example, Giles and Galvin, 12, states that CoG candidates must satisfy the following heuristic, or rule-of-thumb, derived from Clausewitz: "Can imposing your will (destroy, defeat, delay) on the potential center of gravity candidate create the deteriorating effect that prevents your foe from achieving his aims and allows the achievement of yours… and will it be decisive?" Readers must make a subjective yes/no assessment. The assumption is if the CoG candidates were properly derived, then only one candidate best meets this rule.

[24] Gheorghe Tecuci et al., "Development and Deployment of a Disciple Agent for Center of Gravity Analysis," *Proceedings of the Fourteenth Innovative Applications of Artificial Intelligence Conference* (Menlo Park, CA: AAAI Press, 2002), 853-860. Early automated CoG determination models were developed at the Center for Strategic Leadership by Keppler and later Galvin for studying historic military operations where the outcomes, and therefore the centers of gravity, were generally known. Dr. Tecuci's work employed advanced artificial intelligence techniques to develop a more robust computer application that was validated using similar historic examples and is now in use at the U.S. Army War College as an educational tool for helping students analyze contemporary strategic situations.

[25] Professor Jerry Comello, United States Army War College, interview by author, 10 February 2006.

[26] Echevarria, 19. Emphasis original.

[27] Echevarria questionned whether the CoG concept applied to all forms of conflict. Drawing from Clausewitz, he suggests on page 15 that "we should look for CoGs only in war designed to defeat the enemy completely" because in those cases "military and political objectives … complement one another," whereas they do not when the political objectives of the war are more limited. In that case, simply propagating political strategic objectives to operational and tactical objectives would suffice.

[28] Echevarria, 19, stressed that the CoG concept "did *not* apply in a situation in which the enemy is *not* connected enough to act with unity." On this point, I respectfully disagree. Even if the glue holding the system together is weak, there still is a system, and it is possible that the system has been inadequately defined by the planner to encompass all aspects, including external, that describe how it holds together and runs.

[29] Ibid., 16-18.

[30] Ibid., 17-18. It is also worthy to note Echevarria's point that the CoG is not necessarily the greatest source of strength. On page 11, he uses Clausewitz's own example from the Prussian-Austrian campaign of 1814 against France. While Prussia's forces were greater in numbers, it was the Austrian leader that glued the alliance together.

[31] Strange, 43.

[32] Ibid., 44-46. Strange identifies two classes of CoGs – moral and physical. He offers two varieties of moral CoG that I would describe as individual, such as the power and influence of a national leader, and collective, such as the belief in a cause or will of the people. He offers three categories of physical CoG -- some aspect of the military or economic elements of

national power, or the might of "large populations". Echevarria, vi, criticizes Strange's approach as not producing true CoGs, but instead produces "centers of critical capabilities" that if attacked would not guarantee the desired effects.

[33] Ibid., 47-48.

[34] Ibid., 48-92. Strange does not offer a formal process of deriving Critical Capabilities, Requirements, and Vulnerabilities, so much as he offers a wide variety of examples to guide the reader.

[35] JP 5-0., IV-12-13.

[36] Ibid.

[37] Ibid, IV-13, box. It is worthy to note that on the previous page, the text is less direct, saying that a CoG "*can be viewed* as the set of …". The reasoning behind this wording is not given, nor are alternative perspectives offered. I believe this is unwise, and the text should reflect the firm definitional construct given in the box on page IV-13.

[38] Ibid., IV-6. Also see Figure IV-2, page IV-7.

[39] Ibid., IV-14.

[40] Ibid., IV-12.

[41] United States Joint Forces Command, *Doctrinal Implications of Operational Net Assessment (ONA)*, Joint Warfighting Center Pamphlet 4 (Norfolk, VA: Joint Warfighting Center, 24 February 2004), 24-25 (hereafter cited as *JWFC Pamphlet 4*). JWFC Pamphlet 4 identifies JP 5-00.2 as the appropriate publication for detailed processes and procedures for ONA. The Joint Electronic Library System entry for JP 5-00.2, available at http://www.dtic.mil/doctrine/pubstat/stat5002.htm ; Internet; accessed 22 January 2006, states that its first draft was completed 31 August 2005, therefore JWFC Pamphlet 4 will form the basis of the discussion in this paper.

[42] Ibid., 10. This enemy can be a "specific nation, region, contingency, or entity" within a combatant commander's area of responsibility.

[43] Ibid., 9, and JP 5-0 (Draft), IV-11.

[44] United States Joint Forces Command, *Commander's Handbook on An Effects-Based Approach to Joint Operations* (Norfolk, VA: Joint Warfighting Center, n.d.), 15 (hereafter cited as *Commander's Handbook*).

[45] JWFC Pamphlet 4, 9.

[46] Ibid., however relational databases do not avoid the problem of 'garbage-in/garbage-out.' It is assumed that the analysts performing ONA database entry are consistent in the way physical entities are translated into the defined data structure of a node.

[47] Ibid, 6.

[48] From Commander's Handbook, 18. "The aim is to take those actions that create the desired operational and strategic effects (while avoiding the undesired effects) within the operational environment. This approach demands a comprehensive understanding of the links between nodes and systems to anticipate the likely behavior of the adversary system and its impact on friendly systems and the remaining environment."

[49] JP 5-0, IV-10.

[50] Ibid., IV-10-11. In the context of CoG, JP 5-0 stresses that the CoG can change during the course of conflict based on the emergence of new capabilities, etc. Consequently, continuous validation of the CoG is important.

[51] Commander's Handbook, 18-19.

[52] JWFC Pamphlet 4, 7-8. The Introduction section of the ONA Concept chapter acknowledges that ONA seeks to improve knowledge of the enemy, but it implies that total knowledge of the enemy is neither achievable nor promised by this process.

[53] Theoretically, any collective node could require subdivision into component parts if they contribute materially to the system.

[54] JWFC Pamphlet, 21, makes a point that the ONA does not replace the existing intelligence processes. Instead, it facilitates the operational planning process by organizing the data necessary to foster a system-of-systems analysis. It also cites as a concern the ability to man systems-of-systems analysts whose roles would be separate from intelligence analysts. Naturally, this almost requires limits be imposed on an ONA database in order to priority intelligence collection efforts.

[55] Peter Willets, "Transnational Actors and International Organizations in Global Politics," *Globalization of World Politics, An Introduction to International Relations* (Oxford, UK: Oxford University Press, 2001), 2nd Edition, 357-383.

[56] This is inferred from the definition of "System-of-Systems Analysis" (SoSA) in JWFC Pamphet 4, 5. A SoSA "attempts to identify, analyze, and relate the goals and objectives, organization, dependencies and inter-dependencies, external influences, strengths, vulnerabilities, and other aspects of the various systems." While analysis of an enemy organization may include predictive behaviors based on the organization's structure, relating this information to the enemy's goals and objectives will cause analysts to focus on the actual behaviors of the enemy system, particularly those that circumvent or undermine the structural behavior. See T.J. Berard, "Rethinking Practices and Structures," *Philosophy of the Social Sciences* (Sage Publications, 2005), Vol. 35, No. 2, June 2005, 196-230.

[57] Ibid.

[58] This is an example of what is described in Berard, 197, as a 'micro-macro' conflict between the specific practices executed among lower echelons of organizations against the structural norms established at the upper echelons.

[59] Relationship permanency is just one aspect of modeling the temporal/spatial aspects of a database entry. Nodes and links can gain or lose attributes according to time intervals. In

modeling structural aspects of a system's behavior, links could be activated or deactivated based on other activities in the system – before, after, concurrently, and nonconcurrently are four examples. Elmasri and Navathe, 649.

[60] United States Joint Forces Command, *Operational Implications of Effects-Based Operations*, Joint Warfighting Center Pamphlet 7 (Norfolk, VA: Joint Warfighting Center, 17 November 2004), 20 (hereafter cited as *JWFC Pamphlet 7*.

[61] Merriam-Webster Online Dictionary, available at http://www.m-w.com/dictionary/reifying; Internet; accessed 10 February 2006, defines reifying as "to regard (something abstract) as a material or concrete thing."

[62] The term 'the media' is a classic example of how reified entities can be misused, sometimes to hide the true context of its use in order to make an issue seem larger than it really is. One example is the Media Research Center, "Media Bias Basics," available at http://www.mediaresearch.org/biasbasics/biasbasics1.asp; Internet; accessed 16 January 2006. An article on this page is advertised as follows: "How the Media Vote. Surveys of journalists' self-reported voting habits show them backing the Democratic candidate in every presidential election since 1964, including landslide losers George McGovern, Walter Mondale and Michael Dukakis." First, this passage is self-contradictory as it equates media with journalists, whereas journalism is just one method of passing information. Second, there are hints that the reference is to only a subset of journalists. The linked page "Journalists' Political Views," http://www.mediaresearch.org/biasbasics/biasbasics.asp; Internet; accessed 16 January 2006, identified that the reference survey actually encompasses a very small selective sample of journalists, and other supporting evidence focuses on an equally vague reified entity "the news media."

By constrast, a better use of the term with adequate context comes from Ralph J. Peters, "The Real Iraq News," New York Post, 23 August 2005, available at http://www.nypost.com/postopinion/opedcolumnists/52321.htm ; Internet; accessed 16 January 2006. Peters wrote, "Which vital issue got the most air-time and ink? The camp-out of a sad, tormented woman who had lost her son, her marriage and her judgment. *The media* pounced on poor Cindy Sheehan in an anti-Bush, anti-war frenzy. The disappointment was obvious when she decided to go home." (emphasis added) In this case, Mr. Peters provided adequate context to the reader, who understands he is not referring to the entire media industry, but primarily those entities involved in supporting Ms. Sheehan's cause, which may or may not have been limited to journalists.

[63] Haberkern, 3.

[64] Nancy Fraser, "Rethinking Recognition: Overcoming Displacement and Reification in Cultural Politics," in *Recognition Struggles and Social Movements* (Cambridge, UK: Cambridge University Press, 2003), offers an example of how the reification of social status and identify distortion provided by greater transcultural interaction and communication serves to fuel social unrest by encouraging "separatism and group enclaving, chauvinism and intolerance, patriarchalism and authoritarianism." In other words, a social group faced with imposed change will seek 'recognition' as an end to itself, a thing to be valued and cherished, and will exercise counterproductive methods to force that recognition to occur.

[65] Berard.

[66] See Note 19.

[67] JWFC Pamphlet 7, 9.

[68] Haberkern.

[69] Commander's Handbook, 17. Figure II-3.

[70] JP 5-0, IV-13.

[71] Giles and Galvin, 10, offers a notion of "primary controlling element" that often serves as a strategic CoG.

[72] Echevarria, 18-19 and JP 5-0, IV-13.

[73] There is a technical issue with this figure as well. Database engineers refer to this as the 'parent-child' problem, where both a collective entity and one of its individual members are depicted as equals. In the case of the figure, the corrupted 'Bank Official' is diagrammed as a separate entity from the 'Central Bank.' The link connecting the two is unnamed, but it is assumed by the reader to reflect the movement of funding as that is the named input link to the Central Bank. In a proper relational construct, Bank Official would be linked to Central Bank as an employee, a child node of the Central Bank. Otherwise, another reader of the figure could mistakenly assume that actions affecting the Central Bank do not automatically perform an effect on the bank employee. Although the actual ONA database underlying this diagram probably would encode this relationship properly, it is easy to see how an untrained database technician would overlook this inconsistency, especially given the heterogeneity of the nodes in the diagram. Ramez Elmasri and Shamkant B. Navathe, *Fundamentals of Database Systems* (Redwood City, CA: The Benjamin/Cummings Publishing Company, Inc., 1989), 254-264, gives a technical overview of hierarchical database structures, including integrity constraints that address problems such as the above.

[74] Commander's Handbook, 17. Figure II-3. As a general comment of the depiction of a system-of-system's analysis of a terrorist group seeking WMD, this figure is awful and ought to be replaced. Beyond the problems identified in the text, this figure does not delineate the different PMESII subsystems, so the reader is left unable to visualize how a system-of-systems analysis would have derived a figure such as the one drawn. A second serious problem is the out-of-nowhere depiction of critical links to "Interdict" without the CoG analysis and enemy courses of action having been studied (these being outside the scope of the figure). As this is a component of an effects-based approach, the friendly actions depicted should at least acknowledge the CoG and the desired state of the system.

[75] JP 5-0, IV-9.

[76] A final comment on JP 5-0 regards the emergence of a potential redundancy between the operational CoG and Critical Capabilities that fall within the military subsystem. JP 5-0, IV-12, states the operational CoG "resides in the military system" and overlaps with the strategic CoG which focuses in the political system. Meanwhile, JP 5-0, IV-13, defines a Critical Capability as "a capability that is considered a crucial enabler for a center of gravity to function as such, and is essential to the accomplishment of the specified or assumed objective(s)." It should therefore

be inferred that an operational CoG can be a Critical Capability for a strategic CoG, even though they overlap.

In the case where the strategic CoG is a military force, this is not a problem. Clausewitz's example of Frederick the Great's Army being the center of gravity is such an example. Under the JP 5-0 construct, the strongest components of that Army would likely be Critical Capabilities.

However, when distinct entities, an operational CoG has a second role as Critical Capability for the strategic CoG, and this can create confusion. Desert Storm offers an example. Keppler, page 7, and Dale Eikmeier, in "The Center of Gravity Debate Resolved," (Fort Leavenworth, KS: Army Command and General Staff College School of Advanced Military Studies, 16 December 1998), both derived the Strategic CoG having been Saddam Hussein and his inner circle of the Ba'ath Party and the operational CoG having been the Republican Guard. Both argued forcefully that the Republican Guard was not the strategic CoG for Iraq, however the JP 5-0 construct requires that the Republican Guard is a connected part of the CoG subsystem. In this instance, planners would identify the Republican Guard as a CC of the strategic CoG and as the operational CoG separately with its own range of CCs.

A third case that could occur involves the lack of an operational CoG, which is entirely possible if the adversary is not relying on military forces to achieve its objectives. Such an instance is highlighted in Bennett's study on the war on drugs, where the enemy strategic CoG is friendly demand and its elements of power do not necessarily include traditional military forces. In this case, the equivalent of an operational CoG might reside in another PMESII system, perhaps economic or infrastructural that facilitates the distribution of drugs to users in friendly territory. This begs the notion that operational CoG equivalents could be defined for diplomatic, informational, and economic elements of power.

[77] JP 5-0, IV-14.

[78] Ibid., IV-16.

[79] Harry A. Tomlin, "The Center of Gravity Through Reverse Engineering," in *Implementing National Military Strategy, Volume I* (Carlisle Barracks, PA: Department of Military Strategy, Planning, and Operations, May 2003), 13-22. Tomlin describes center of gravity as a concept of grand strategy, and that some contemporary interpretations of CoG were too narrow and fixated on the force-on-force land-centric aspects of the concept. "The main effort of *On War* is directed at the higher plane of the politics that brings us to war in the first place. … Accordingly, the strategic Center of Gravity needs to be the sole property of the strategic leadership of the nation at war."

[80] For example, information about the political wing of the military leadership would more likely come from intelligence sources and not through mil-to-mil contacts.

[81] Tomlin, 13-23. "The operational center of gravity belongs to the combatant commander or joint/combined force commander who is responsible for the planning and execution of the operational level of war."

[82] Clausewitz, 119-121. Applying Clausewitz's notions to effects-based approaches against a CoG, friction will likely cause those approaches to take effect more slowly than anticipated, and the effects may not manifest themselves clearly. However, friendly forces must avoid the

temptation of assuming that the lack of strategic effect necessarily means that the wrong CoG was targeted.

[83] Echevarria, 16. It should also be mentioned that JP 5-0 does not in any way suggest that the most direct path to mission accomplishment will necessarily be a quick one.

[84] This author acknowledges that this is a shortcoming in his previous work, Giles and Galvin. For example, Giles and Galvin, 17, describes "will of the people" as a CoG candidate for most representative democracies. However, the level or importance of the will of the people often differs depending on the strategic objective, and overlapping objectives may produce distinct candidates. For example, for IRAQI FREEDOM, friendly will to prosecute the WOT and friendly will to liberate Iraq were both important yet arguably distinct psychosocial entities.

[85] Tomlin, 13-29. Tomlin suggests that the "primary output of ONA must be the identification of the strategic and operational Centers of Gravity." As I believe that strategic CoG determination may belong at the interagency level, ONA may actually be applied twice and differently at the interagency and joint levels to determine their respective CoGs.